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AUGHENBAUGH, WALTER

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JOHN E. KRECH, PAUL D. DRISCOLL,  
JAMES R. HARRISON, DENIS M. MILING,  
DOMASIU NWABUNMA, MARIO A. PEREZ,  
and DONALD F. REUTER

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Appeal 2008-4345  
Application 09/990,601  
Technology Center 1700

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Decided: January 29, 2009

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Before TERRY J. OWENS, PETER F KRATZ, and JEFFREY T. SMITH,  
*Administrative Patent Judges.*

SMITH, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the  
Primary Examiner's rejection of claims 30, 32-37, 46-53, and 55-65. We

have jurisdiction pursuant to 35 U.S.C. § 6.<sup>1</sup>

Appellants' invention is directed to a plastic pallet comprising a halogen free hydrocarbon polyolefin resin, a halogen free thermosetting resin and a halogen free flame retardant. Claims 30 and 64 are representative of the invention and is reproduced below:

30. A flame-retardant containing plastic pallet comprising a plastic pallet composition comprising

a) one or more of polyolefin resins or blends thereof comprising 51 to 99 parts by weight of at least one of a fully prepolymerized uncrosslinked hydrocarbon polyolefin resin and a fully pre-polymerized uncrosslinked functionalized polyolefin resin, the parts by weight being based on the total composition, wherein said hydrocarbon polyolefin is present in the range of 25 to 99 parts by weight of the total composition and said functionalized polyolefin is present in the range of 0 to 50 parts by weight of the total composition, and

b) one or more thermosetting resins comprising 1 to 49 parts by weight of a curable thermosetting resin, the parts by weight being based on the total composition, all of said resins being free of halogen,

wherein said plastic pallet contains at least one flame retardant, wherein all the flame retardant(s) in said plastic pallet are selected only from the group consisting of non-halogenated flame retardants.

64. A flame-retardant containing plastic pallet comprising a plastic pallet composition comprising

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<sup>1</sup> In rendering this decision, we have considered the Appellants' arguments presented in the Appeal Brief dated May 31, 2007 and the Reply Brief dated November 7, 2007

- a) one or more of polyolefin resins or blends thereof comprising 51 to 99 parts by weight of an least one of a fully prepolymerized uncrosslinked hydrocarbon polyolefin resin and a fully prepolymerized uncrosslinked functionalized polyolefin resins, the parts by weight being based on the total composition, wherein said hydrocarbon polyolefin is present in the range of 25 to 99 parts by weight of the total composition and said functionalized polyolefin is present in the range in the range of 0 to 50 parts by weight of the total composition, and
- b) one or more of epoxy resins comprising 1 to 49 parts by weight of a curable epoxy resin, the parts by weight based on the total composition,  
all of said resins being free of halogen

wherein said plastic pallet is a molded pallet that contains at least one flame retardant, where all of the flame retardant(s) in said plastic pallet are selected only form the group consisting of non-halogenated flame retardants, and wherein said molded plastic pallet further comprises in-mold applied friction material laminated adhesive-free to at least one surface of said pallet.

The following is a list of the evidence relied upon:

Angell	3,268,636	Aug. 23, 1966
Dyckman	3,979,354	Sept. 07, 1976
Ueeda	4,604,441	Aug. 05, 1986
Juhanson	4,655,360	Apr. 07, 1987
Perez	5,709,948	Jan. 20, 1998
Oishi	5,744,504	Apr. 28, 1998
Radican	6,148,291	Nov. 14, 2000
Endo	6,344,508 B1	Feb. 05, 2002

Claims 30, 32-37, 46-53, and 55-65 stand rejected under 35 U.S.C. §103(a) as follows:<sup>2</sup>

- I. Claims 30, 32, 34-37, 47, 50-53, 55, and 57-61 over the combined teachings of Oishi and Endo.
- II. Claim 33 over the combined teachings of Oishi, Endo, Perez, and Angell.
- III. Claim 46 over the combined teachings of Oishi, Endo, and Radican.
- IV. Claims 48 and 64 over the combined teachings of Oishi, Endo, and Juhanson.
- V. Claim 49 over the combined teachings of Oishi, Endo, Radican, and Juhanson.
- VI. Claims 56 and 63 over the combined teachings of Oishi, Endo, and Perez.
- VII. Claim 62 over the combined teachings of Oishi, Endo, Ueeda, and Dyckman.
- VIII. Claim 65 over the combined teachings of Oishi, Endo, and Juhanson.

For the reasons set forth below we affirm the rejections of claims 30, 32-37, 46, 47-53, and 55-63; and we reverse the rejections of claims 64 and 65.

#### ISSUES ON APPEAL

The Examiner finds that Oishi discloses the formation of plastic articles from blends of polyolefin and thermosetting resins including halogen free polyolefin resin and halogen free thermosetting resin. (Ans. 3-4). The Examiner recognizes that Oishi does not include a pallet in the list of

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<sup>2</sup> The rejection of claim 64 under 35 U.S.C. §112, first paragraph, has been withdrawn by the Examiner. (Ans. 2).

suitable plastic articles. (Ans. 4). The Examiner finds that Endo teaches plastic pallets that comprise flame retardants and blends of halogen free polyolefin and thermosetting resins. (Ans. 4). The Examiner concluded that it would have been obvious to a person of ordinary skill in the art to utilize the composition of Oishi to form a plastic pallet comprising a halogen free polyolefin resin, a halogen free thermosetting resin, and a halogen free flame retardant. (Ans. 3-5).

Appellants contend that Oishi describes three inventive groups and does not teach or suggest that the compositions from one of those groups can be used in an application recommended for another inventive group.

Appellants contend that despite that lack of teaching or suggestion, the Examiner improperly combined teachings from Oishi's second inventive group compositions with uses intended for the third inventive group without offering any rationale or motivation. (App. Br. 9). Appellants contend that there is no disclosure in Oishi concerning how to select (from the many resins listed) the halogen free polyolefin resins and the halogen free thermosetting resins used in the claimed invention. Appellants further contend that there is no disclosure in Oishi to select halogen free flame retardants. (App. Br. 10). Appellants contend that Endo does not disclose, teach, or suggest the use of blends of polyolefin ends in thermosetting resins or the selection of the particular types of resins used in the claimed invention and does not cure the deficiencies of Oishi. (App. Br. 10).

For the first ground of rejection<sup>3</sup>, the principal issue presented is:<sup>4</sup> did Appellants identify reversible error in the Examiner's rejection of claim 30 under § 103? We answer this question in the negative. The issue turns on whether it would have been obvious to a person of ordinary skill in the art to form a plastic pallet comprising a halogen free polyolefin resin, a halogen free thermosetting resin, and a halogen free flame retardant.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we are in complete agreement with the Examiner that the claimed subject matter is not patentable within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection.

#### OPINION

We determine the following Findings of Fact (FF) from the record presented in this Appeal:

- (1) The Specification discloses that plastic shipping and storage containers are known and widely used in national and international commerce. (Spec. 1).

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<sup>3</sup> Claims 30, 32, 34-37, 47, 50-53, 55, and 57-61 stand rejected over the combined teachings of Oishi and Endo.

<sup>4</sup> Appellants, in addition to addressing independent claim 30, have addressed several of the claims subject to the first ground of rejection separately. We will first address independent claim 30 and will subsequently address the other specific claims argued by Appellants. For this rejection any claim not specifically argued by Appellants will stand or fall with independent claim 30.

- (2) The Specification discloses that one problem with plastic pallets is that during fires they are subject to flowing, which results in molten plastics spreading heat and fire. Thus, the National Fire Protection Association has passed stringent regulations for plastic pallets. (Spec. 1).
- (3) The Specification reveals thermosetting resins, such as epoxy resins, and thermoplastic resins are known to be suitable for forming plastic pallets. (Spec. 1-2).
- (4) The Specification discloses that the US patent 3,581,681 describes plastic pallet formed from polyolefin and epoxy resins. However, the Specification discloses that no additives are disclosed as being included in the described compositions. (Spec. 2).
- (5) The Specification discloses that the US patent 5,709,948 (Perez) describes molded foam parts formed from semi-interpenetrating polymer networks of polyolefin and epoxy resins. (Spec. 2; Perez, col. 11, l. 63- col. 12, l. 3).
- (6) Oishi's second inventive group is directed to diguanamines and their derivatives and polymeric microspheres, which are useful as flame retardants, heat stabilizers, compatibility improvers for resins. (Oishi, col. 17, ll. 51-61).
- (7) Oishi specifically describes the second inventive group as follows:

This invention relates to modification of resin raw materials, resins and rubbers — such as polymerizable monomers, polyurethane resins, polyester resins, amino resins, paint resins, adhesive resins, paper coating



resins, fiber processing resins, foaming resins, molding resins and laminates, and specifically to diguanamines and their derivatives and polymeric microspheres, which are useful as flame retardants, heat stabilizers, compatibility improvers or the like for resins. This invention is also concerned with applications of such flame retardants, heat stabilizers and compatibility improvers.

(Oishi, col. 17, ll. 51-61).

- (8) Oishi discloses that halogen containing flame retardants have known drawbacks such as poor heat resistance, sublimation, bleeding, and give off extremely noxious halogen containing gas in a large volume in a fire. (Oishi, col. 18, ll. 30-40).
- (9) Oishi discloses “these diguanamines have better heat resistance than melamines, sublimation, bleeding and/or the like is not observed, formation of char is excellent, and sagging or dripping of oil droplets or melt is substantially minimized, thereby making it possible to provide an excellent method for making resins retardant to flame.” (Oishi, col. 19, ll. 6-11).
- (10) Oishi discloses the flame retardant diguanamines are suitable for thermoplastic resins and thermosetting resins including blends. (Oishi, col. 29, ll. 1-6).
- (11) Oishi discloses additives which are suitable for incorporation in plastic articles formed from thermoplastic resins and thermosetting resins blends. (Oishi, col. 30, ll. 11-17).

- (12) Oishi discloses that non-halogenated and halogenated thermoplastic and thermosetting resins are known to be used in combination to make various articles. (Oishi, col. 29).

Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007) (citing 35 U.S.C. § 103 (a)). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) secondary considerations, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734.

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 127 S. Ct. at 1739. The question to be asked is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR*, 127 S. Ct. at 1740.

“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 127 S. Ct. at 1740-41. *See also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006) (“The motivation need not be found in the references sought to be combined, but may be found in any number of

sources, including common knowledge, the prior art as a whole, or the nature of the problem itself.”); *In re O’Farrell*, 853 F.2d 894, 903-04 (Fed. Cir. 1988) (“For obviousness under § 103, all that is required is a reasonable expectation of success.” (citations omitted));

Applying the preceding legal principles to the Factual Findings (FF) in the record of this appeal, we determine that the Examiner has established a prima facie case of obviousness, which prima facie case has not been adequately rebutted by Appellants’ arguments. The present record reveals that deficiencies with plastic pallets were known to persons of ordinary skill in the art. (FF (1-2)). The present record reveals that the process of forming plastic articles from blends of thermoplastic and thermosetting resins was known to persons of ordinary skill in the art. (FF (3-4)). The Specification discloses that during fires plastic pallets are subject to flowing, which results in molten plastics spreading heat and fire. Oishi discloses that halogen containing flame retardants have known drawbacks such as poor heat resistance, sublimation, bleeding, and that they give off an extremely noxious halogen containing gas in a large volume in a fire. (FF (8)). Oishi sought to eliminate halogen containing flame retardants from plastic articles. (FF (9)). A person of ordinary skill in the art would have reasonably expected any halogens in plastic resins to have emitted noxious halogen containing gas in a fire. Thus, a person of ordinary skill in the art would have excluded halogen containing components from plastic articles that were subject to extreme heat and possible fire conditions. In other words, a person of ordinary skill in the art would have found it desirable to form plastic articles, including plastic pallets, from thermosetting and thermoplastic polymer resins and flame retardants that excluded halogens.

Appellants contend the claimed invention, that comprises polyolefin and halogen free thermosetting resins and non-halogenated flame retardants, overcomes the deficiencies of plastic pallets (e.g., melting and flowing under high heat or fire resulting in molten plastic spreading heat, fire, and hazardous or toxic gases). (App. Br. 7-8). The deficiencies identified by Appellants were also recognized by Oishi and the subject of regulation by the National Fire Protection Association. (FF (2 and 8)). As stated above, a person of ordinary skill in the art would have determined that plastic articles subject to extreme heat and possible fire conditions should not have halogen containing components. Moreover regarding the use of only non-halogenated resins, Oishi discloses a variety of thermoplastic and thermosetting resins are known to be used in combination to make various articles. (FF (11)). A person of ordinary skill in the art would have reasonably expected that any of the described resins could have been used in combination with one another. Appellants have not asserted that it was unknown prior to this invention to utilize only non-halogenated resins in combination with one another to form plastic articles. As set forth above, FF (1-4), the formation of plastic pallets comprising blends of thermosetting and thermoplastic resins was known to persons of ordinary skill in the art. A person of ordinary skill in the art would have selected resins that excluded halogens based on the known properties of various resins and a desire to avoid the known properties and characteristics of halogenated resins.

Appellants' arguments regarding the exclusivity of various embodiments of Oishi are not persuasive. The underlying issue presented for review in the present Appeal was whether it would have been obvious to a person of ordinary skill in the art to form a plastic pallet comprising a

halogen free polyolefin resin, a halogen free thermosetting resin, and a halogen free flame retardant. As stated above, a person of ordinary skill in the art would have determined that plastic articles that were subject to extreme heat and possible fire conditions should have excluded halogen containing components.

Regarding claims 32 and 50, Appellants contend the Examiner has offered no reason for the conclusion that it would have been obvious to select an epoxy resin from the thermosetting resins described in Oishi. (App. Br. 12 and 14). Appellants' argument is not persuasive. Appellants have not contended that Oishi does not describe an epoxy resin as a suitable thermosetting resin for the formation of plastic articles. A person of ordinary skill in the art would have reasonably expected that any component, including an epoxy resin, described as suitable for the invention of the cited reference would have been suitable for the invention described therein.

Regarding claims 34, 35, 37, 47, 51 and 60, Appellants contend the Examiner has offered no reason for the conclusion that it would have been obvious to include the described additives, e.g., filler, anti-microbial agents and flame retardants as described in the rejected claims. (App. Br. 13-15). A person of ordinary skill would have reasonably expected that known additives would have been suitable for use in the invention of Oishi for their known purpose. Appellants have not asserted that these additive components are not known to be utilized in plastic articles. Appellants have not asserted that these components, when used in the claimed invention, produce an unexpected result when utilized in combination with a thermoplastic and thermosetting resin. A person of ordinary skill in the art

would have sufficient skill to determine the appropriate levels to incorporate these components in a plastic article.

Regarding claim 59, appellants contend that Oishi and Endo do not describe, teach, or suggest the use of a semi-interpenetrating polymer network. (App. Br. 14-15). The issue presented for review is whether a person of ordinary skill in the art would have found it obvious to utilize a semi-interpenetrating polymer network in the formation of plastic articles including a plastic pallet. As set forth above, FF (5), it was known by persons of ordinary skill in the art to form molded articles from semi-interpenetrating polymer networks of polyolefin and epoxy resins. A person of ordinary skill in the art would have reasonably expected that these components could have been utilized to form plastic pallets.

Regarding the rejection of claim 33 under 35 U.S.C. § 103(a) over the combined teachings of Oishi, Endo, Perez, and Angell and the rejection of claim 56 and 63 over the combined teachings of Oishi, Endo, and Perez., we affirm these rejections advanced by the Examiner. The Examiner cited the Perez and Angell references for describing molded polymer networks and the properties associated therewith. (Ans. 7-8). Appellants contend that Perez and Angell do not cure the deficiencies of Oishi and Endo. Appellants further contend that Perez does not disclose that polymer networks are structural and can be applied to plastic pallets. (App. Br. 16-17). The issue presented for review is whether a person of ordinary skill in the art would have found it obvious to utilize polymer networks in the formation of plastic articles including a plastic pallet. We answer this question in the affirmative.

As set forth above, the combined teachings of Oishi and Endo describe blends of thermoplastic and thermosetting resins suitable for the formation of plastic articles, including pallets, as specified by the claimed invention. Appellants have not asserted nor directed us to evidence that thermoplastic and thermosetting polymer networks, such as those described in Perez and those of Angell, are not suitable for the formation of plastic articles. Perez expressly discloses that the polymer networks are suitable for the formation of molded foam parts. (FF (5)). Appellants have failed to argue that a person of ordinary skill in the art would not have reasonably expected that a plastic pallet could have been formed from a molding process. Appellants have failed to argue that the molded polymer networks described by Perez would not possess the properties of an integral skin and cellular core.

Regarding the rejection of claim 46 under 35 U.S.C. § 103(a) over the combined teachings of Oishi, Endo, and Radican; we affirm this rejection advanced by the Examiner. Claim 46 specifies that the pallet comprises at least one radio frequency identification (RFID) tag. The Examiner found that Radican discloses how RFIDs are utilized for the purpose of identifying containers for rapid acquisition and updating a container location. We agree with the Examiner that a person of ordinary skill in the art would have reasonably expected that a RFID would have been suitable for application to plastic pallets for similar purposes. “[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 127 S. Ct. at 1740-41. Appellants’ arguments of the contrary are not persuasive.

Regarding the rejections of claim 48 under 35 U.S.C. § 103(a) over the combined teachings of Oishi, Endo, and Juhanson; and the rejection of claim 49 under 35 U.S.C. § 103(a) over the combined teachings of Oishi, Endo, Radican, and Juhanson; we affirm these rejections advanced by the Examiner. As set forth above, a person of ordinary skill the art would have found it obvious to incorporate a RFID on a plastic pallet for the purpose of identifying the pallet for rapid acquisition and updating the pallet location. The Examiner cited Juhanson for describing the application of a friction material to the bottom of plastic containers. (Ans. 12). A person of ordinary skill in the art would likewise have found it obvious to add a friction material to the bottom of the plastic pallet. Appellants have not refuted this determination. Rather to overcome the rejection of claim 49, Appellants rely on the arguments presented for claim 35. (App. Br. 20). To overcome the rejection of claim 48, Appellants assert that the claim depends on claim 30. (App. Br. 18).

Regarding the rejection of claim 62 under 35 U.S.C. § 103(a) over the combined teachings of Oishi, Endo, Ueeda and Dyckman, the Examiner cited Ueeda and Dyckman for describing the blending of anti-microbial additives with resin compositions. (Ans. 17-18). Appellants contend that the Examiner has offered no reason for the conclusion that it would have been obvious to include the described anti-microbial additives in the composition of Oishi and Endo. (App. Br. 21). We do not agree. A person of ordinary skill would have reasonably expected that known additives would have been suitable for use in the invention of Oishi for their known purpose. Appellants have not asserted that these additive components are not known to be utilized in plastic articles. Appellants have not asserted that



these components, when used in the claimed invention, produce an unexpected result when utilized in combination with a thermoplastic and thermosetting resin.

Regarding the rejections of claims 64 and 65 under 35 U.S.C. § 103(a) over the combined teachings of Oishi, Endo, and Juhanson; we reverse this rejections advanced by the Examiner. Appellants contend that Juhanson does not cure the deficiencies of Oishi and Endo previously discussed and does not described an in-mold applied friction material laminated to at least one surface of a plastic pallet. (App. Br. 18-19, 22). The Specification states that “‘in-mold lamination’ means placed in the mold and becomes laminated to subsequently added resin without added adhesive.” (Spec. 5). The Examiner has indicated that the claimed terminology “in-mold applied” has not been given patentable weight in determining the patentability of the subject matter of claim 64. (Ans. 10). The Examiner bears the initial burden of presenting a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). In order to establish a prima facie case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. The Examiner has failed to assert that the technique of laminating a high friction material to a plastic article was obvious to a person of ordinary skill in the art. In light of the foregoing, we cannot sustain the Examiner’s §103 rejections of claims 64 and 65.

For the foregoing reasons and those stated in the Answer, we affirm the rejections of claims 30, 32-37, 46, 47-53, and 55-63 presented in this appeal. However we reverse the rejections of claims 64 and 65.

Appeal 2008-4345  
Application 09/990,601

ORDER

The rejections of claims 30, 32-37, 46, 47-53, and 55-63 under 35 U.S.C. § 103(a) are affirmed. The rejections of claims 64 and 65 under 35 U.S.C. § 103(a) are reversed.

No time period for taking any subsequent action in connection with this Appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN PART

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